DOCUMENT RESUME

ED 285 537 IR 012 742

AUTHOR Greene, Elinor C.; And Others
TITLE Effects of Television and Picture Book Attributes on Children's Memory of Visual and Auditory Facts.
PUB DATE Feb 87
NOTE 12p.; Paper presented at the Annual Convention of the Association for Educational Communications and Technology (Atlanta, GA, February 26-March 1, 1987). For the complete proceedings, see IR 012 723.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Audiotape Recordings; *Aural Learning; Comparative Analysis; *Educational Television; Grade 3; *Intermode Differences; *Picture Books; Primary Education; *Short Term Memory; *Visual Learning
IDENTIFIERS AECT Research and Theory Division Meeting

ABSTRACT

This research compared the effects of a televised presentation and a picture book on children's recall of specific verbal and visual content using 48 third-grade students in Florida as subjects. The children were first stratified by sex and then randomly assigned to view the same story in either a picture book with audiotape or a televised condition. Following the story, children were individually asked questions about visually and verbally referenced facts. The results failed to support the two major hypotheses: that children exposed to a televised story will remember more visual story content, and that children exposed to a picture book story will recall more verbal content. No significant differences were found in recall of either visually or verbally referenced facts. An unexpected finding indicated that children who watched the televised story recalled significantly more facts overall, and it is suggested that the story materials and the recall test used may have influenced the results. Two references are listed, and a statistical table and the factual recall test are appended. (Author/MES)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED285537

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Title:

Effects of Television and Picture Book Attributes on Children's Memory of Visual and Auditory Facts

Authors:

Elinor C. Greene
Rengen Li
Brenda C. Litchfield

IR012742

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Michael R.Simonson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Effects of Television and Picture Book Attributes on Children's Memory of Visual and Auditory Facts

Elinor C. Greene

Rengen Li

Brenda C. Litchfield

Department of Educational Research

The Florida State University

Tallahassee, Florida

Running Head: CHILDREN'S MEMORY OF FACTS

BEST COPY AVAILABLE

ABSTRACT

This study examined the effects of television and picture book attributes on children's memory of visually and verbally referenced facts. Forty-eight third grade students were first stratified by sex and then randomly assigned to view the same story in either a picture book with audiotape or a television condition. Following the story, the children were individually asked questions about specific visually and verbally referenced story content. There were no significant differences in children's recall of verbally or visually referenced facts. The unique nature of the recall measures employed, however, may have influenced these results. An unexpected finding suggested that the children who watched the televisied story recalled significantly more facts overall than the children who viewed the picture book with audiotape version. These findings are presented, and additional implications of the results are discussed.

Effects of Television and Picture Book Attributes on Children's Memory of Visual and Auditory Facts

Children are expected to learn a wide range of factual information from a variety of media sources in today's schools. However, educators rarely consider the impact of media attributes on the types of facts being learned. For example, children process both verbal and visual information when they are read to from picture books and when they view televised presentations. Few researchers have compared the effects of picture book and television attributes on children's memory of verbally and visually referenced facts.

Recent studies have been conducted to examine the effects of combinations of media attributes on children's memory of new information. Meringoff (1980) compared the effects of a television presentation and a picture book on children's recall of verbal and visual information presented via both media. She observed that children who viewed a narrated story on television remembered more story actions than children who were read to from a picture book version of the same story. However, the children who were read to from the picture book recalled more figurative language. In a related study, Beagles-Roos and Gat (1983) compared the impact of television versus radio on learning facts. They reported that children who were exposed to a televised version of a story performed better on a visual-memory test than the children exposed to a radio version of the same story. The children who listened to the radio version performed better on a verbal recall test.

Meringoff's and Beagle-Roos & Gat's research differed in terms of the media attributes they compared; however, both studies resulted in similiar findings. That is, children who viewed a televisied version of a story remembered more facts with visual characteristics than children who were exposed to either a radio or a picture book version of the same story. It should be noted that either free or cued-recall measures were used in both studies. Neither study was designed to measure children's recall of specific verbal and visual story content.

This research was designed to compare the effects of a television presentation and a picture book on children's recall of visually and verbally referenced facts. It is unique because the test items were constructed to assess recall of specific verbal and visual content.

It was expected that the children who were exposed to the televised version of the story would have

greater recall of the visual, non-verbal content, and the children who were exposed to the picture book version would have greater recall of the verbal, non-visual content. The reasons for these expectations were twofold. Previous research had indicated that children who viewed a televised story remembered more visually oriented actions, whereas those who were read the same story from a picture book recalled more of the figuarative language from the story (Meringoff, 1980). Moreover, children who heard a radio version of a story performed better on a verbal-recall test than children who viewed a televised version of the same story (Beagles-Roos and Gat, 1983).

METHODS

Subjects

Subjects in this study were 48 third grade students who attend the Florida State University laboratory school. The students who attend the school are selected so that they are representative of the school age population of the state of Florida with respect to academic ability, sex, race, and socio-economic factors.

Instructional Materials

This study consisted of two conditions, a televised version and a picture book version of the African folktale A Story, A Story. Both conditions used the same audiotape and lasted 8 minutes and 29 seconds. The televised version consisted of an animated videotape. The picture book version consisted of a 32 page picture book and the audiotape. The illustrations in both versions were similiar.

A ten item test was constructed for use in both conditions to measure children's recall of verbally and visually referenced story content. The five verbally referenced test items related to facts that were stated in the audiotape but were not seen in the illustrations of either version. The five visually referenced test items related to facts that were seen in both versions but were not heard on the audiotape. The factual recall test is presented in Appendix A.

Procedure

The subjects in this study were first stratified by s and then randomly assigned to one of the two medi conditions, picture book or television. Each experimenter worked individually with children in both conditions.

An identical protocol was followed for each condition. The children were picked up at their regular classrooms and were taken to a prepared observation room. The children were told that they were going to view a short story, either in a book or on television,

and to try not to interrupt until the story was over. The children who viewed the picture book sat next to the experimenter who held the book and turned the pages. The book was held equidistant between child and experimenter. In the television condition the child and experimenter sat next to each other and viewed the story together. The TV monitor was located about four feet from the viewer's chairs. The audiotape was loud enough to be easily heard in both conditions.

When the story was over, the children were told that they would be asked some questions because the experimenter was interested in finding out what they remembered. It was stated that there were no absolutely correct answers to the questions, and guessing was encouraged. In addition, the children were informed that they would receive a reward for trying their best to answer the questions. The questions were administered orally, and the children's responses were taped. Once the test was completed, the children were given their rewards and were returned to their classrooms.

Audiotapes of the children's responses were scored blind as to presentation medium. The responses were scored by judges according to predetermined criteria that had been developed for each question.

RESULTS

The dependent variable, recall of verbally and visually referenced facts, was measured by the number of correct responses to the test items. Responses to one of the visually referenced test items were not used in the analyses because the test item was determined to be ambiguous and therefore invalid. Thus, measurements used in the analyses were obtained from four visually referenced items and five verbally referenced items.

For each of the two media conditions, the obtained scores were first examined visually. The means and standard deviations caculated for each set of scores appeared consistent with the assumption of normality (see Table 1). Three F-max statistics were then applied to test the assumption of homogeneity of variance. Obtained values revealed no significant differences between the variances of the scores under each of the two dependent measures; that is, recall of verbally referenced facts, F-max $(2,24) = 1.3$, $p > .05$, and recall of visually referenced facts F-max $(2,24) = 2.2$, $p > .05$. In addition, when the verbal recall and visual recall scores for each subject were combined, the variances of the resultant set of scores did not differ significantly, F-max $(2,24) = 1.97$, $p > .05$.

Because the assumption of homogeneity of variance was not violated, the descriptive statistics depicted

in Table 1 were determined appropriate for parametric analyses.

Insert Table 1 about here

Three one-way analyses of variance were computed to compare the performance of the two groups on both the visual and the audio sections of the factual recall test. Alpha was set at .05 for all statistical tests. The first analysis was to determine if the children who were exposed to a televised story recalled significantly more visually referenced facts than the children who were exposed to a picture book story. Although the children who watched the televisied story recalled more visually referenced facts ($M = 3.0$, $n = 26$) than those who viewed the picture book version ($M = 2.5$, $n = 22$), the results indicated that the difference was not statistically significant, F (1,46) = 3.11, $p > .05$.

The second analysis was to determine if the children who were exposed to a picture book recalled significantly more verbally referenced facts than the children who were exposed to a televised story. However, the children who watched the televisied story also recalled more verbally referenced facts ($M = 1.9$, $n = 26$) than the children who viewed the picture book version ($M = 1.4$, $n = 22$). The second analysis of variance failed to yield significant differences for recall of verbally referenced facts F (1,46) = 2.49, $p > .05$.

As indicated in Table 1, the children who viewed the televisied story performed better on both sections of the test. Moreover, when total scores on the test were compared in the third analysis, the children who watched the televisied story recalled significantly more facts ($M = 4.9$, $n = 26$) than the children who viewed the picture book ($M = 3.9$, $n = 22$), F (1,46) = 4.68, $p > .05$. This effect explained about 9 percent of the total variance in test performance.

Finally, it should be noted that the children in both conditions recalled a greater percentage of visually referenced facts than verbally referenced facts.

DISCUSSION

The results failed to support the major hypotheses of this research study- that children who are exposed to a televisied story will remember more visual, non-verbal story content, and that children who are exposed to a picture book story will remember more verbal, non-visual story content. Previous research (Meringoff, 1980; Beagles-Roos & Gat, 1983) suggests

that there is a difference in children's recall of verbally and visually referenced facts presented via two different media attributes- audio and visual. The results of the present study are not consistent with the previous research findings.

The lack of significant results may be an artifact of the story materials which were used in this study. The story was an African folktale, and the narrator on the audiotape spoke with an accent which may have been difficult for the children to understand. Furthermore, the names of the characters were unfamiliar to the children. These two factors may have influenced the children's memory of the verbally referenced story content.

Another related factor which may have influenced the results of the study was the test. The test used in this study was unique in that it was designed to measure children's recall of specific verbal and visual story content. Tests which derived significant findings in previous studies (Meringoff, 1980; Beagle-Roos & Gat, 1983) consisted of either free or cued-recall measures. Furthermore, during test construction procedures, content analyses revealed that much of the essential story content was referenced in both the audiotape and the illustrations. Because the test items used in this study were constructed to reference only information presented via one track, i.e., audio or video, it is possible that some of the test items referenced non-memorable or trivial story content.

This research should to be replicated using different story materials. Use of appropriate materials will enable researchers to determine to what extent a given media attribute will influence children's recall of both verbally and visually referenced story content. The story selected should be unfamiliar, but the character's names should be familiar and the narration should be easy to understand. To facilitate development of relevant test items, particular emphasis should be placed on selecting a story that contains adequate amounts of essential story content represented in the narrative, and other essential content represented only in the illustrations. Clearly, further delineation of the effects of media attributes on children's recall will eventually result in improved textual materials, and increased retention of factual information.

References

Beagles-Roos, J., & Gat, I. (1983). The specific impact of radio and television on children's story comprehension. Journal of Educational Psychology, 75, 128-137.

Meringoff, L.K. (1980). Influence of the medium on children's story apprehension. Journal of Educational Psychology, 72, 240-244.

Table 1

Children's Recall of Visually and Verbally Referenced Facts

Media Condition		Facts Recalled		
		Visually Referenced	Verbally Referenced	Total Recalled
Television (n = 26)	M	3.00	1.90	4.90
	SD	0.84	1.29	1.47
Picture book (n = 22)	M	2.50	1.40	3.90
	SD	1.26	1.13	2.06
Average (n = 48)	M	2.75	1.67	4.40
	SD	1.08	1.24	1.83

Note. The maximum score for visual recall is 4, the maximum score for verbal recall is 5, and the maximum score for total recall is 9.

Appendix A

FACTUAL RECALL TEST

Narrative Questions

1. What was Ananse's nickname?
2. Where did the stories go when Ananse opened the box?
3. What did the fairy call the doll that Ananse made?
4. Osebo was called the leopard of the _____.
5. When Ananse caught the leopard he said _____.

Visual Questions

6. After the sky God gave Ananse the stories, how did Ananse get back to earth?
7. What was Ananse holding when he talked to the sky God?
8. What was Ananse wearing?
9. Where did Ananse find the hornet's nest?
10. What did the fairy use to eat the yams?